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ABSTRACT

Research has indicated a correlation between lower self-esteem and decision making skills in children and increased drug use in later life. To promote the skills needed to make sound decisions regarding drug use and to develop general skills for healthy living, an alcohol and drug education program was presented to third and fourth grade pupils in 21 elementary schools in a large, urban school district of the Southwest. During the 1983-84 school year an evaluation of the program was conducted with 520 third and fourth grade pupils at five elementary schools. A measure of decision making and self-esteem was administered as a pretest, a posttest, and as a second posttest to a treatment group and to a comparison group. Grade-level repeated measures analyses of variance provided evidence of a group by time interaction effect on decision making and self-esteem at the third grade. An interaction effect was also found with respect to decision making at the fourth grade level. Post hoc tests did not locate significant mean differences, although trends in the data supported an effect of the program over time. (Author/JAC)

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EVALUATION OF A DRUG EDUCATION PROGRAM IN THE THIRD AND FOURTH GRADES

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ABSTRACT

An alcohol and drug education program was presented to third and fourth grade pupils in 21 elementary schools in a large, urban school district of the Southwest. During the 1983-84 school year, the evaluation of the program was conducted with 520 third and fourth grade pupils at five elementary schools. A measure of decision-making and self esteem was administered as a pretest, a posttest, and a second posttest to a treatment group and to a comparison group.

Grade-level repeated measures analyses of variance provided evidence of a group X time interaction effect on decision-making and self-esteem at the third grade. An interaction effect was also found with respect to decision-making at the fourth grade level. Post hoc tests did not locate significant mean differences although trends in the data supported an effect of the program over time.

INTRODUCTION

Current thinking in alcohol and drug education suggests that children are less likely to abuse drugs in later life if they can communicate their thoughts and feelings; make sound decisions and feel good about themselves. Research repeatedly indicates a correlation between lowered self-esteem and drug use among youth (1-6). Lower self-esteem appears to he associated with lower expectation of success, motivation and achievement. All of these variables are somewhat predictive of drug use (1). Self-esteem can be enhanced through affective teaching methods. Since elementary school children are in their formative years, the development of self-esteem is important to a healthy outlook on life. Accordingly, attempts to improve self-esteem with this age group usually have a positive effect on later drug use practices.

Poor decision-making skill, although related to self-esteem, has not attracted the attention of researchers in drug education. This lack of attention may be because researchers have focused more on the major predictors of drug use than on other variables. However, studies that focus on decision-making skills state the need for the inclusion of these skills in a drug and alcohol education curriculum (7,8).

Authors of a recent textbook on drug and alcohol education, Chocolate to Morphine: Understanding Mind-active Drugs stress the necessity of teaching children how to make decisions coupled with accurate drug information. Authors Weil and Rosen suggest that the combination of decision-making skills and information will assist children in forming good relationships with drugs rather than bad or addicting relationships with drugs (9).

A substantial amount of drug education research has examined the adolescent years and later (10-13). Until the early 1980's it was understood that the prevalence of drug and alcohol use among youth was with high school students. Although high school students continue to be the largest drug-using population among the young, recent researchers have reported the inception of drug use occuring at an increasingly early age (14-16). Teachers and prevention specialists have begun to conduct drug education courses at the early elementary grades so as to educate children before the onset of the adolescent years. A number of curriculums currently in use begin with kindergarten students and continue through grade twelve. The purpose of this paper is to present an evaluation of the Matrix Alcohol and Drug Education Program in the third and fourth grades of an urban school district.

The Matrix Alcohol and Drug Education Program for third and fourth grade students was designed (a) to teach students drug and

alcohol information, (b) to improve decision-making skills, (c) to improve communication skills, and (d) to improve students' self-esteem. The program lasted ten consecutive school days utilizing one hour each day in the students' regular classroom. The program was presented to students by two Matrix staff members. The goals of the ten-day program were for students: (a) to learn about beneficial and harmful drugs, (b) to increase self-awareness, (c) to raise students' ability to express their feelings, (d) to create a positive and open classroom learning environment, and (e) to improve students' ability to make decisions.

Some instructional materials were added in order to adapt the modules to the needs of third and fourth grade students living in a multicultural community in the Southwest. Attention was given to the cultural and religious use of drugs and alcohol. Characters depicted in stories and role play situations included names and circumstances reflective of the diverse ethnic groups of the Southwest. Modules were designed to draw from the student's unique background. All exercises portrayed male and female characters in non-sex typed roles. The use of male and female pronouns were included throughout the program.

The methods of presentation were varied within each class period. The short attention span of third and fourth grade students required

an education approach utilizing a brief lecture, visuals, small group activity, written exercises, role play situations and discussion. This age group is anxious to discuss and practice new knowledge and skills, therefore plenty of time was built in for skill practice. A number of modules were designed as games as a vehicle for enhancing class participation.

Teachers were invited to participate with the class during the Matrix program. Exercises designed to enhance self-esteem and decision-making ability were given to the teacher to use as ongoing reinforcement. A number of the modules included homework. Students were encouraged to do homework exercises with their parents. Students were also encouraged to discuss each topic with their parents. By including regular classroom teachers and parents as integral components of the program, it was hoped to provide the basis of a continuing education program after the termination of the Matrix program.

Although the curriculum was directed at the prevention of substance abuse, the general approach of the program included the development of general skills for healthy living. The overarching goal of the curriculum was to provide third and fourth grade students with skills before the onset of the drug experimentation years so that they would be able to make sound decisions and not abuse drugs as adolescents and adults.

METHOD

Subjects

A total of 21 elementary schools in a large, urban school district of the Southwest participated in the Matrix Substance Abuse Prevention Program for third and fourth grade students. Of those schools five were selected for the program evaluation. The five schools were selected for the evaluation according to the following criteria: (a) two classes would participate in the third grade and two classes in the fourth grade, (b) each school represented a different geographical area of the city, and (c) the schools represented a low income area and a middle income area. At each selected school, one class initially received the Matrix Program (the treatment class) and the other class (the comparison class) did not receive the Matrix Program. When the Matrix Program was completed, the comparison class received the treatment.

A total of 254 elementary school students (128 third graders and 126 fourth graders) participated in the Matrix Program at the five selected elementary schools during the Spring of 1984. Another 266 students (138 third graders and 128 fourth graders) at the same schools did not participate in the program but were tested to obtain comparative evaluation information. Overall, 50% of the students were males and 50% were females. The ethnic backgrounds of the

students were 46% Hispanic, 44% non-Hispanic Caucasian, 5% Black, 3% Asian, 1% Native American and 1% other.

Instrument

The Matrix Evaluation Survey was developed for the evaluation of the 1983-1984 program. The survey consisted of twenty sentences to which each pupil would circle a T (True) or F (False). The administration of the survey took about five minutes. The survey was designed to be brief, to avoid controversial statements, and to be easy to administer. The confidentiality of each student's test results was strictly maintained by assigning a code number to each survey form. Student names did not appear anywhere on the survey. In addition, students were informed that no one would know which paper was theirs.

The survey consisted of two subscales: Items 1-10 comprised the Decision-Making subscale, and items 11-20 consisted of the Self-Esteem scale. The Decision-Making scale items were derived from information in the Matrix curriculum which was given to pupils during the 10-day program. This scale tapped three areas of interest: (a) the importance of communication by expressing one's thoughts and listening to others (3 items); (b) the ideas that good decision-making skills involve using rules, talking to parents, and using one's own ideas (5 items); and (c) the ideas that drinking alcohol can lead to problems (2 items).

The Self-Esteem scale assessed three areas: (a) the student's general self-esteem as reflected in the student's pride, sense of being useful, and the liking of self (4 items), (b) the academic self-esteem as reflected in grades, and teacher opinion of the student (3 items), and (c) the student's perceived self-esteem as reflected in significant others - friends, teachers, and parents.

Procedure

All testing was conducted in the spring of 1984 in the students' regular classroom. The survey was first administered as a pretest on the day preceding the program. The second testing (posttest 1) was administered the last day of the 10-day program. The third testing (Posttest 2) was given four weeks after the first posttest. The reason for administering a second posttest was to determine if students would maintain their achievement levels four weeks after the termination of the program.

A 2 X 3 repeated measures analysis of variance was conducted with group membership (treatment/comparison) and time (pretest/posttest 1/posttest 2) as the factors. A repeated measures design was selected in order to examine sustained effects of the program. The focus of this analysis was on the interaction between group membership and time. Main effects due to group membership were not relevant to the evaluation nor were main effects due to time relevant. If the interaction was significant, it would mean that there was some change

between the treatment and comparison groups across time. Bonferroni *t* tests were conducted to compare treatment and comparison group means across time when there was a significant interaction. Essentially, in the Bonferroni tests, the alpha level is divided by the number of planned comparisons. In this study, the *t* test probability level was .016 or (.05/3) in order to be significant at the .05 level.

RESULTS

The pretest means of the treatment and comparison groups were examined to determine the initial equivalence of the two groups. The results indicated there were no significant differences between groups before the beginning of the program ($ps > .29$).

The hypothesis of no interaction between group membership and time on students' decision-making at the third grade was rejected, $F(2,372) = p < .029$. Bonferroni tests failed to identify significant mean differences between treatment and comparison groups at the .05 level, although there was a tendency for the treatment group to increase over time in decision-making skills from a position below the comparison group to a position where the treatment group's mean exceeded that of the comparison group at posttest 1 ($t(186) = 1.62$, $p < .103$. At posttest 2, the treatment group remained above the comparison group ($t(1.86) = 1.68$, $p < .091$. Refer to Table 1.

TABLE 1

Mean scores of third grade students in the Treatment and Comparison Groups.

Subscale	N	Pretest Mean	Pretest SD	Posttest 1 Mean	Posttest 1 SD	Posttest 2 Mean	Posttest 2 SD
Decision-Making							
Treatment	90	7.92	1.25	8.61	1.13	8.70	1.14
Comparison	98	8.04	1.05	8.33	1.23	8.39	1.37
Self-Esteem							
Treatment	90	8.31	1.32	8.08	1.66	8.26	1.57
Comparison	96	8.51	1.27	8.30	1.35	8.07	1.75

A significant group by time interaction was also found when the Self-esteem scale was analyzed for third grade students, $F(2,368) = 3.04$, $p < .049$. Once again Bonferroni tests failed to clearly identify the treatment and comparison groups means which contributed to the significant interaction. The treatment group appeared to be similar from pretest ($t(184) = -1.05$, $p < .294$) to posttest 2 ($t(184) = .78$, $p < .444$. The slight change of position of the treatment group from below the comparison group at the pretest to slightly above the comparison group at posttest 2 seems to have resulted in the significant F test for interaction.

The hypothesis of no group by time interaction on decision-making was rejected for fourth grade students, $F(2,328) = 3.13$, $p < .045$. Bonferroni tests detected group mean differences in decision making at posttest 2 where the treatment group approached a significant difference above the comparison group, $t(156) = 2.19$, $p < .028$. Since this was the Bonferroni test, it can only be stated that the difference approached significance.

TABLE 2

Mean scores of fourth grade students in the Treatment and Comparison Groups.

Subscale	N	Pretest Mean	Pretest SD	Posttest 1 Mean	Posttest 1 SD	Posttest 2 Mean	Posttest 2 SD
Decision-Making							
Treatment	90	7.68	1.17	8.09	1.27	8.19	1.13
Comparison	71	7.66	1.29	8.08	1.26	7.75	1.42
Self-Esteem							
Treatment	87	8.14	1.43	8.26	1.60	8.31	1.62
Comparison	71	8.00	1.43	7.94	1.85	7.86	1.97

The hypothesis of no group by time interaction effect on self-esteem levels of the fourth grade students could not be rejected, $F(2,312) = .77$, $p < .462$. This evidence then, suggested that the mean self-esteem of the treatment and comparison groups remained comparable from pretest to posttest 2.

DISCUSSION

Two trends were evident in the findings of the present study: (a) the treatment group appeared to exceed the comparison group in the third and fourth grades in decision-making skills, and (b) the self-esteem results showed small but consistent positive changes across time favoring the treatment group. Although these trends and changes did not reach the level of statistical significance, they do furnish information on which to evaluate the program.

The repeated measures design proved to be an important design because some of the positive contrasts across time between the treatment and comparison groups did not show favorable results until the second posttest - four weeks after the termination of the program. These long term effects may be due partly to the inclusion of parents and teachers as integral parts of the alcohol and drug education program. For example, teachers often would participate in the classroom programs presented by the Matrix staff. Further,

teachers were informed of the goals and objectives of the program. Indeed, teachers were informed as to how they could help to complement and sustain the objectives of the program. The other important component of the Matrix program were the parents. They were encouraged to participate and to help their children in various ways to meet the objectives of the program. Such parental involvement was designed to further the objectives of the Matrix program during the ten-day program and after the end of the program.

The results of this evaluation suggest only a small impact of the program. Large effects of a ten-day program may be unrealistic. Experience from the Matrix suggest two ways in which program effects could be increased: (a) the length of time of the program could be increased. Although this may appear to be easily implemented, the intrusion into the regular classroom education time, may cause resistance to the program from public school administrators, (b) the focus of the program could be modified from its comprehensive nature to a more restricted approach. That approach could emphasize only two or three major objectives.

This evaluation of a third and fourth grade alcohol and drug education program has found some informative trends in the analysis. These trends suggest that the length and content of the programs should be carefully examined to maximize the effect of the programs. Further, the effects of the programs may not be clear in a statistical sense, although trends can be detected and informative supportive evidence can be provided to decision-makers.

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